

10/6/16 "You just can't beat the person who never gives up."-Babe Ruth

HW: "Factoring Sum/Difference" worksheet #2-12 even
Test 2 on Wednesday 10/19

AIM: How do we Factor the Sum/Difference of Cubes?

Warm Up:

Factor the following:

1) $(x + 1)^2 - 4$

$$\begin{aligned} & ((x+1) - 2)((x+1) + 2) \\ & (x-1)(x+3) \end{aligned}$$

2) $x^4 + 4x^2 + 4$

$$(x^2 + 2)(x^2 + 2)$$

$$x^2 + 4x + 4$$

(A) (M)

$$x^6 + 4x^3 + 4$$
$$(x^3 + 2)(x^3 + 2)$$

HW

3)

$$6x^2 - 11x + 4$$

$$ac = 24$$

$$\underline{6x^2 - 8x} \quad \underline{-3x + 4}$$

$$2x(3x-4) \quad -1(3x-4)$$

$$(3x-4)(2x-1)$$

$$8) 24x^2 - 6xy - 9y^2$$

$$3(8x^2 - 2xy - 3y^2)$$

$$ac = -24$$

$$\underline{8x^2 + 4xy} \quad \underline{-6xy - 3y^2}$$

$$4x(2x+y) \quad -3y(2x+y)$$

$$3(2x+y)(4x-3y)$$

Formulas:

Sum of Cubes: $c^3 + d^3 = (c + d)(c^2 - cd + d^2)$

Difference of cubes: $c^3 - d^3 = (c - d)(c^2 + cd + d^2)$



To remember the signs in the parenthesis use the word SOAP based on the sign of the given sum/difference

S Same
 O Opposite
 AP Always Positive

$$c^3 \underline{+} d^3 = (c \overset{S}{+} d)(c^2 \overset{O}{-} cd \overset{AP}{+} d^2)$$

$$c^3 - d^3 = (c \overset{S}{-} d)(c^2 \overset{O}{+} cd \overset{AP}{+} d^2)$$

$$1) x^3 + 125 = (x + 5)(x^2 - 5x + 25)$$

$$\sqrt[3]{x^3} = x$$

$$\sqrt[3]{125} = 5$$

$$(x+5)(x^2-5x+25)$$

$$3) x^3 - 64 = (x - 4)(x^2 + 4x + 16)$$

$$\sqrt[3]{x^3} = x$$

$$\sqrt[3]{64} = 4$$

$$(x-4)(x^2+4x+16)$$

$$5) x^3 - 27 = (x - 3)(x^2 + 3x + 9)$$

$$(x-3)(x^2+3x+9)$$

$$7) 1 - a^3 = (1 - a)(1 + a + a^2)$$

$$(1-a)(1+a+a^2)$$

OR

$$\begin{aligned} & -a^3 + 1 \\ & -(a^3 - 1) \end{aligned} \quad (-(a-1)(a^2+a+1))$$

$$9) x^3 + 27 = (x + 3)(x^2 - 3x + 9)$$

$$11) 8x^3 + 27 = (2x + 3)(4x^2 - 6x + 9)$$

$$\sqrt[3]{8x^3} = 2x$$

$$\sqrt[3]{27} = 3$$

$$(2x+3)(4x^2-6x+9)$$